AMENDMENTS TO THE CLAIMS

1.(original): An optical network unit coupled to an optical access network system, which receives a data stream and dechurns information contained in the received data stream by using a churning key, comprising:

(a) churning parameter memory means for storing churning parameters that indicate which logical connections are churned or not churned, comprising:

(al) first memory means, initially assigned an active role, for storing the churning parameters that are currently used, and

(a2) second memory means, initially assigned a backup role, for storing newly updated churning parameters,

wherein said first memory means and second memory means are controlled so that the active and backup roles will alternate with each other at every churning key updating time point at which an updated churning key becomes effective; and

(b) data dechurning means for receiving a data stream consisting of a plurality of frames and dechurning churned information contained in the data stream according to the churning parameters stored in said first or second memory means currently playing the active role, the churning parameters being activated at the beginning of a frame subsequent to the churning key updating time point.

2.(original): The optical network unit according to claim 1, wherein:

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said first memory means is assigned the backup role, and said second memory means is assigned the active role as a result of said alternating of the active and backup roles at the churning key updating time point; and

said churning parameter memory means performs a copying process to copy the stored churning parameters from said second memory means to said first memory means.

3.(original): The optical network unit according to claim 2, wherein said churning parameter memory means saves a new churning parameter into said first memory means after the copying process is finished, when the new churning parameter is received during the copying process.

4.(original): The optical network unit according to claim 1, wherein said churning parameter memory means comprises said first and second memory means each having two ports for reading out data therefrom.

5.(original): The optical network unit according to claim 1, wherein said churning parameter memory means, after receiving each newly updated churning parameter, verifies whether the received churning parameter has correctly been written to said first or second memory means, and returns an acknowledge message only when the received churning parameter is successfully verified.

6. The optical network unit according to claim 1, further comprising:

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a non-volatile memory; and

external memory control means for storing the churning parameters into

said non-volatile memory.

7.(original):   The optical network unit according to claim 6, wherein said

external memory control means compares each received churning parameter with the

corresponding churning parameter read out of said second memory means currently

playing the backup role, so as to write only changed churning parameters to said non-

volatile memory.

8.(original):   The optical network unit according to claim 6, wherein:

said external memory control means comprises a local memory to store

the churning parameters temporarily; and

upon power-down, said external memory control means transfers at a time

the churning parameters from said local memory to said non-volatile memory.

9.(original):   The optical network unit according to claim 6, wherein:

said external memory control means comprises a local memory to store

the churning parameters temporarily; and

upon power-down, said external memory control means transfers only

changed churning parameters from said local memory to said non-volatile memory.

10.(original):   The optical network unit according to claim 6, wherein said

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churning parameter memory means receives the churning parameters from said non-volatile memory only when the optical network unit is in a standby state after power-up.

11.(original):   The optical network unit according to claim 6, wherein said churning parameter memory means activates either of the churning parameters received from said non-volatile memory and a set of newly supplied churning parameters after power-up.

12.(original):   The optical network unit according to claim 1, further comprising dechurning mask means for disabling the dechurning function of said data dechurning means during a period from a restarting time point to the churning key updating time point, said restarting time point being a time point when the optical network unit reenters an operating state from another state after having left the operating state.

13.(currently amended):   An optical network unit coupled to an optical access network system, which receives a data stream and dechurns information contained in the received data stream by using a churning key, comprising:

churning parameter memory means for storing received churning parameters that indicate which logical connections are churned or not churned; and

data dechurning means for receiving the data stream consisting of a plurality of frames and dechurning the information contained in the data stream according to the churning parameters stored in said churning parameter memory means, the stored

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churning parameters being activated at the beginning of each frame, whereby an update

having been made thereto in a specific frame becomes effective in the next frame.

14.(currently amended):   An optical line terminal coupled to an optical access

network system, which transmits a data stream containing information that is churned by

using a churning key, comprising:

flag control means for controlling flags when sending the data stream to a

receiving end; and

churning parameter transmission control means for controlling

transmission of churning parameters to the receiving end, based on the status of the flags,

the churning parameters indicating which logical connections are churned or not churn,

wherein the flags include an initial parameter delivered flag, and said flag

control means clears the initial parameter delivered flag when the receiving end is in a

standby state, and sets the initial parameter delivered flag at the end of an initial

parameter delivery process that delivers an entire set of the current churning parameters

to the receiving end.

15.(cancelled)

16.(original):   The optical line terminal according to claim 14, wherein the flags

provided by said flag controlling means include an initial parameter delivery in progress

flag that indicates that an initial parameter delivery process is in progress to deliver an

entire set of the current churning parameters to the receiving end.

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17.(original):   The optical line terminal according to claim 14, wherein said flag control means sets a parameter update failure flag when an update of the churning parameters being stored in the receiving end has failed.

18.(original):   The optical line terminal according to claim 14, wherein said flag control means sets a parameter update unfinished flag when the receiving end has left an operating state.

19.(original):   The optical line terminal according to claim 14, wherein said flag control means sets a churning key updating flag when the optical line terminal is updating the churning key.

20.(original):   The optical line terminal according to claim 14, wherein said flag control means sets a parameter update request flag when initiating an update of the churning parameters.

21.(original):   The optical line terminal according to claim 20, wherein said flag control means sets the parameter update request flag to initiate an update of one logical connection for one receiving end.

22.(original):   The optical line terminal according to claim 14, wherein said flag control means sets a parameter updating flag when the churning parameters are being

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updated.

23.(currently amended): An optical line terminal coupled to an optical access network system, which transmits a data stream containing information that is churned by using a churning key, comprising:

flag control means for controlling flags when sending the data stream to a receiving end;

churning parameter transmission control means for controlling transmission of churning parameters to the receiving end, based on the status of the flags, the churning parameters indicating which logical connections are churned or not churned; and

~~The optical line terminal according to claim 14, further comprising~~

churning parameter overwriting means for performing a churning parameter overwriting process that resends the churning parameters to the receiving end, wherein said churning parameter overwriting means suspends the overwriting process while the churning parameters are being updated.

24.(original): The optical line terminal according to claim 23, wherein said churning parameter overwriting means suspends the churning parameter overwriting process when transmitting another message having a higher priority.

25.(cancelled)

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26.(original):   The optical line terminal according to claim 23, wherein:

said churning parameter overwriting means comprises a timer that operates at predetermined intervals; and

said churning parameter overwriting means is regularly activated by said timer.

27.(original):   The optical line terminal according to claim 26, wherein the interval of said timer is given by an external source.

28.(currently amended):   The optical line terminal according to claim 29 [[14]], wherein:

said churning parameter transmission control means transmits a churning parameter message multiple times to send one of the churning parameters to the receiving end;

when sending the first instance of the churning parameter message, said churning parameter transmission control means performs arbitration between the churning parameter message and other messages; and

after the arbitration is finished, said churning parameter transmission control means automatically transmits the multiple instances of the churning parameter message at predetermined intervals.

29.(currently amended):   An optical line terminal coupled to an optical access network system, which transmits a data stream containing information that is churned by

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using a churning key, comprising:

flag control means for controlling flags when sending the data stream to a

receiving end;

churning parameter transmission control means for controlling

transmission of churning parameters to the receiving end, based on the status of the flags,

the churning parameters indicating which logical connections are churned or not churned;

and

~~The optical line terminal according to claim 14, further comprising~~

churning parameter updating means for updating the churning parameters

at a churning key updating time point where the churning key is updated.